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2. The method as claimed in claim 1, further comprising the step of stripping away the layer of metallic germanium after performing the step of selectively etching the dielectric layer.

- 1 4. The method as claimed in claim 3, the step of removing the layer of  
2 germanium oxide including rising the semiconductor substrate in water.

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1 The method as claimed in claim 2, the step of stripping away the layer of  
2 metallic germanium including stripping away the layer of metallic germanium  
3 before performing the step of selectively etching the semiconductor substrate.

1 6. The method as claimed in claim 1, the step of depositing a layer of metallic  
2 germanium including depositing the layer of metallic germanium having a  
3 thickness between approximately 40 nm and approximately 500 nm.

1 7. The method as claimed in claim 1, the step of patterning the layer of metallic  
2 germanium further including the steps of:  
3 depositing a photo resist layer over the layer of metallic germanium;  
4 exposing and developing the photo resist layer to form a photolithography  
5 image; and  
6 etching the layer of metallic germanium through the photolithography image.

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1 8. The method as claimed in claim 1, the step of forming a dielectric layer further  
2 including the steps of:  
3 forming a pad oxide layer having a thickness between approximately 5 nm and  
4 approximately 30 nm over the major surface of the semiconductor  
5 substrate;  
6 depositing a nitride layer having a thickness between 50 nm and approximately  
7 300 nm over the pad oxide layer; and  
8 depositing a mask oxide layer having a thickness between 800 nm and  
9 approximately 3,000 nm over the nitride layer.

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1 9. A method for fabricating a semiconductor device, comprising the steps of:  
2 forming a dielectric stack over a major surface of a semiconductor substrate;  
3 depositing a metallic germanium layer over the dielectric stack;  
4 patterning the metallic germanium layer to form a germanium hard mask over  
5 the dielectric stack;  
6 etching the dielectric stack through germanium hard mask to form a dielectric  
7 hard mask over the major surface of the semiconductor substrate;  
8 etching the semiconductor substrate through the dielectric hard mask;  
9 forming doped regions in the semiconductor substrate; and  
10 forming dielectric and conductive structures over the semiconductor substrate.

1 10. The method as claimed in claim 9, further comprising the step of stripping  
2 away the metallic germanium layer after the step of etching the dielectric stack  
3 and before the step of etching the semiconductor substrate.

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1 11. The method as claimed in claim 10, wherein the step of stripping away the  
2 metallic germanium layer includes the steps of:  
3 oxidizing the metallic germanium layer; and  
4 rising the semiconductor substrate in water.

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1 12. The method as claimed in claim 9, wherein the step of depositing a metallic  
2 germanium layer includes depositing the metallic germanium layer having a  
3 thickness between approximately 40 nm and approximately 500 nm in a  
4 chemical vapor deposition process.

1 13. The method as claimed in claim 9, wherein the step of patterning metallic  
2 germanium layer further includes the steps of:  
3 depositing a photo resist layer over the metallic germanium layer;  
4 exposing and developing the photo resist layer to form a photolithography  
5 image; and  
6 etching the metallic germanium layer through the photolithography image.

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1 14. The method as claimed in claim 9, wherein the step of forming a dielectric  
2 stack further includes the steps of:  
3 forming a pad oxide layer having a thickness between approximately 5 nm and  
4 approximately 30 nm on the major surface of the semiconductor  
5 substrate;  
6 depositing a nitride layer having a thickness between 50 nm and approximately  
7 300 nm on the pad oxide layer; and  
8 depositing a mask oxide layer having a thickness between 800 nm and  
9 approximately 3000 nm on the nitride layer.

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17. The method as claimed in claim 16, wherein the step of patterning the layer of metallic germanium further includes the steps of:  
depositing a photo resist layer over the layer of metallic germanium;  
patterning the photo resist layer to form a photolithography mask; and  
etching the layer of metallic germanium through the photolithography mask.

1 18. The method as claimed in claim 16, further comprising the step of stripping  
2 away the germanium hard mask after etching the dielectric stack and before  
3 etching the semiconductor wafer.

1 <sup>Sub</sup> 19. The method as claimed in claim 18, wherein the step of stripping away the  
2 germanium hard mask includes the steps of:  
3 oxidizing the layer of metallic germanium to convert the layer of metallic  
4 germanium into a layer of germanium oxide; and  
5 removing the layer of germanium oxide.

1 20. The method as claimed in claim 19, wherein the step of removing the layer of  
2 germanium oxide includes rising the semiconductor wafer in water.

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